

Agenda Item: 13-6**Meeting Date: October 13 and 14, 2004****SUBSIDENCE, SEISMICITY AND SEA LEVEL RISE:
THE DYNAMIC FUTURE OF THE DELTA*****Presentation by Dr. Jeffrey Mount
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Based on the 2000 Record of Decision, an explicit goal of the California Bay-Delta Program is to stabilize and maintain the current configuration of channels and islands in the Delta. This effort is based on the assumption that hydraulic integrity of the Delta is necessary for meeting water supply, water quality and ecosystem restoration objectives. First-order simulations of historic and projected subsidence of Delta islands, coupled with sea level rise, indicate that it will become increasingly difficult and expensive to maintain the Delta levee system. Two landscape-scale measures are simulated: the volume of sub-sea level space in the Delta and the forces that seek to fill that space with water and sediment. During the period 1900-2000, subsidence created approximately 3.25 billion cubic yards (2 million acre-feet) of sub-sea level space in the Delta. From 2000-2050, subsidence rates will slow due to depletion of organic material and better land use practices. However, by 2050 the Delta will contain roughly 4 billion cubic yards (2.5 million acre-feet) of sub-sea level space due to continued subsidence and sea level rise. The forces that seek to occupy that accommodation space through levee failures are, in part, a function of the relative depth of islands. These forces increase significantly by the year 2050.

Simulations of increases in subsidence and sea level rise indicate a tendency for increased frequency in island failures, with escalating costs for repairs and increasing threat to water supply systems. Additionally, there is a two-in-three chance that 100-year recurrence interval floods or earthquake events will cause catastrophic flooding in the Delta by 2050. This may have significant, long-term impacts on the hydraulic integrity of the Delta. Currently, the California Bay-Delta Authority has no overarching policy that addresses the consequences of and potential responses to gradual or abrupt landscape change in the Delta. None of the California Bay-Delta Programs, with the exception of the Levee Integrity Program, are also considering Delta changes in their planning.

*The presentation does not represent the views of the Independent Science Board (ISB). A draft report that contains this information is currently under review by the ISB.